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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,802	11/21/2003	J. Rodney Walton	030422	3339
23696 OLIA I COMM	7590 05/16/2007	i	EXAN	MINER
5775 MOREH		·	KUMAR	, PANKAJ
SAN DIEGO, CA 92121			ART UNIT	PAPER NUMBER
			2611	
			NOTIFICATION DATE	DELIVERY MODE
	4		05/16/2007	ELECTRONIC

# Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com kascanla@qualcomm.com nanm@qualcomm.com

<u> </u>	1	Application No.	Applicant(s)			
Office Action Summary		10/719,802	WALTON ET AL.			
		Examiner	Art Unit			
		Pankaj Kumar	2611			
Period f	The MAILING DATE of this communication app	ears on the cover sheet	with the correspondence address			
	IORTENED STATUTORY PERIOD FOR REPLY	VIS SET TO EVEIDE a	MONTH(S) OR THIRTY (20) DAVE			
WHI( - Exte after - If NO - Failt Any	CHEVER IS LONGER, FROM THE MAILING DATE IN THE	ATE OF THIS COMMUN 36(a). In no event, however, may will apply and will expire SIX (6) M to cause the application to become	NICATION.  If a reply be timely filed  ONTHS from the mailing date of this communication.  ABANDONED (35 U.S.C. § 133).			
Status						
1)🛛	Responsive to communication(s) filed on 26 Fe	ebruary 2007.				
2a)□	This action is <b>FINAL</b> . 2b)⊠ This action is non-final.					
3) 🗀	Since this application is in condition for allowance except for formal matters, prosecution as to the merits is					
	closed in accordance with the practice under E	x parte Quayle, 1935 C	.D. 11, 453 O.G. 213.			
Disposit	ion of Claims					
4)🛛	Claim(s) 1-13 and 37-41 is/are pending in the	application.				
	4a) Of the above claim(s) is/are withdrawn from consideration.					
5)⊠	Claim(s) <u>37-41</u> is/are allowed.					
	Claim(s) <u>1-3,8,9,11 and 12</u> is/are rejected.					
	Claim(s) <u>4-7,10 and 13</u> is/are objected to.					
8)[_]	Claim(s) are subject to restriction and/or	r election requirement.				
Applicat	ion Papers					
9)	The specification is objected to by the Examine	r.	·			
	The drawing(s) filed on <u>11/21/2003</u> , <u>9/18/2006</u>		r b)⊡ objected to by the Examiner.			
	Applicant may not request that any objection to the					
	Replacement drawing sheet(s) including the correct		· · · · · · · · · · · · · · · · · · ·			
11)	The oath or declaration is objected to by the Ex	aminer. Note the attach	ed Office Action or form PTO-152.			
<b>Priority</b>	under 35 U.S.C. § 119					
	Acknowledgment is made of a claim for foreign All b) Some * c) None of:	priority under 35 U.S.C	. § 119(a)-(d) or (f).			
a)						
	<ul> <li>1. Certified copies of the priority documents have been received.</li> <li>2. Certified copies of the priority documents have been received in Application No</li> </ul>					
	3. Copies of the certified copies of the prior					
	application from the International Bureau	· · · · · · · · · · · · · · · · · · ·	m mo rational Gtage			
. * (	See the attached detailed Office action for a list	• • • • • • • • • • • • • • • • • • • •	ot received.			
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Attachmen	• •	,, <del>[ ]</del> .				
1) Notice 2) Notice	e of References Cited (PTO-892) of Draftsperson's Patent Drawing Review (PTO-948)		v Summary (PTO-413) o(s)/Mail Date			
3) 🔯 Infor	mation Disclosure Statement(s) (PTO/SB/08) r No(s)/Mail Date		f Informal Patent Application			

Art Unit: 2611

#### **DETAILED ACTION**

#### Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- 2. Claims 1, 2, 3, 8, 9, 11, 12 are rejected under 35 U.S.C. 102(a) as being anticipated by Agee USPN 6,512,737.
- 3. As per claim 1, Agee teaches obtaining, from a plurality of receive antennas at a receiving entity, a plurality of received symbol streams for a plurality of data symbol streams sent by a plurality of transmitting entities (Agee fig. 1: many receivers and transmitters; col. 4 line 57: symbol; fig. 8: symbol 246, 248), one data symbol stream for each transmitting entity, wherein the data symbol stream for each transmitting entity is spatially processed (Agee col. 8 lines 40-42: antennas that each express differential spatial signal sensitivities) with a steering vector for the transmitting entity and sent from a plurality of transmit antennas at the transmitting entity (Agee col. 23 lines 15-17: transmitter antenna array weights equal to Karray \* 1 packet steering vector; col. 24 lines 27-28: packet steering vector has dimension Karray vector; hence on steering value for each element of an array); and processing the plurality of received symbol streams in accordance with a receiver spatial processing technique to obtain a plurality of received data symbol streams (Agee col. 6 line 66 to col. 7 line 10), which are estimates of the plurality of data symbol streams (Agee: receiver inherently estimates what the transmitter transmitted).

Application/Control Number: 10/719,802

Art Unit: 2611

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processing technique is a channel correlation matrix inversion (CCMI) technique (Agee fig. 8:

As per claim 2, Agee teaches the method of claim 1, wherein the receiver spatial

Page 3

257, fig. 9: 287: correlating via frequency channel bank or matrix and 257 is the inverse of it) or

a minimum mean square error (MMSE) technique (Agee col. 24 lines 36-37: mean squared

error).

4.

5. As per claim 3, Agee teaches the method of claim 1, wherein the receiver spatial

processing technique is a successive interference cancellation (SIC) technique (Agee: successive

signals are filtered to remove the interference).

6. Claim 8, 11 is discussed above with respect to claim 1.

7. Claim 9, 12 is discussed above with respect to claim 2.

### Allowable Subject Matter

- 8. Claims 4-7, 10, 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
- 9. Claims 37-41 are allowed.
- 10. The art of record does not suggest the respective claim combinations together and nor would the respective claim combinations be obvious with:
- 11. As per claims 37-39: decomposing the channel response matrix to obtain a plurality of eigenvectors and a plurality of singular values, one eigenvector for each singular value; and deriving the steering vector for the transmitting entity based on an eigenvector corresponding to a largest singular value among the plurality of singular values.

Application/Control Number: 10/719,802

Art Unit: 2611

12. As per claim 40: a controller operative to decompose the channel response matrix to

obtain a plurality of eigenvectors and a plurality of singular values, one eigenvector for each

singular value and to derive the steering vector for the transmitting entity based on an

eigenvector corresponding to a largest singular value among the plurality of singular values

13. As per claim 41: decomposing the channel response matrix to obtain a plurality of

eigenvectors and a plurality of singular values, one eigenvector for each singular value; and

means for deriving the steering vector for the transmitting entity based on an eigenvector

corresponding to a largest singular value among the plurality of singular values

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Page 4

Art Unit: 2611

#### Conclusion

- 14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Monday through Friday.
- 15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
- 16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <a href="http://pair-direct.uspto.gov">http://pair-direct.uspto.gov</a>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Pankaj Kumar Primary Examiner Art Unit 2611